

**ABSTRACT**

A phantom and film cassette therefor, a composition of high atomic number elements and tissue-equivalent material for a phantom, and an adjustable holder for a phantom. The film cassette comprises sections of tissue-equivalent material, wherein the sections retain a sheet of film when closed together and the phantom composition comprises tissue-equivalent material and high atomic number elements. In operation, dose distributions are determined via computation at various depths within a simulated water-equivalent phantom. After calculating dose distributions, an actual beam is delivered to a phantom containing the cassette, or utilizing a phantom containing high atomic number elements, wherein the phantom mimics human tissue, wherein the phantom houses radiographic film. Images are then generated on the film, the images are converted into an actual dose distribution, and the actual dose distribution is compared with the calculated dose distributions. Finally, a patient is treated based on the beam delivery thus verified.